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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,882	03/31/2004	Young Hoon Park	YPL-0089	9074
23413	7590	03/24/2005	EXAMINER	
CANTOR COLBURN, LLP 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002			FORD, ALLISON M	
			ART UNIT	PAPER NUMBER
			1651	

DATE MAILED: 03/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/815,882

Applicant(s)

PARK ET AL.

Examiner

Allison M. Ford

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-7 is/are rejected.
- 7) ☒ Claim(s) 2-7 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

The disclosure is objected to because of the following informalities: Pg. 1, ln 10, "Klebsiella pneumoniae," is spelled incorrectly. Appropriate correction is required.

Claim Objections

Claims 4-7 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. See MPEP § 608.01(n). Claims 4-7 have been treated as if they refer to the method of claim 1, only.

Claims 2 and 3 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant's claim 5 requires the medium to contain 5-15g NaPH₄; it is not clear what NaPH₄ is, it appears applicant intended to require the medium to contain 5-15g NaHPO₄ (See Specification, Table 1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Badia et al (J Bacteriology, 1984), in view of Cameron et al (US Patent 6,303,352).

Badia et al teach a process of producing 1,2-propanediol, comprising incubating *Klebsiella pneumoniae* in a medium containing 20mM (approximately 3.60 g/L) glucose, in aerobic conditions, and then separating the 1,2-propanediol from the culture (see Pg. 435 col. 2 and Table 1). (It is noted that in Table 1 the growth conditions associated with the glucose carbon source is reported as anaerobic; however, from the description on page 435, column 2, it is clear the growth conditions were actually aerobic, "...when the cells grew aerobically on fucose, rhamnose or other sugars such as glucose (Table 1)").

Badia et al do not teach using the claimed range of 10-50 g/L of glucose as the carbon source; however, at the time the invention was made it would have been obvious to one of ordinary skill in the art to add more glucose to the reaction mixture because the Badia et al fermentation only produced 0.2mM 1,2-propanediol (approximately 15 mg/L). One would reasonably expect that increasing the amount of glucose, even significantly, in the mixture would produce at least the same amount of 1,2-propanediol and would actually expect that significantly more 1,2-propanediol would be produced because glucose is the sole carbon source.

Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or

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temperature is critical. "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (Claimed process which was performed at a temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be prima facie obvious over a reference process which differed from the claims only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%.); see also *Peterson*, 315 F.3d at 1330, 65 USPQ2d at 1382 *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). For more recent cases applying this principle, see *Merck & Co. Inc. v. Biocraft Laboratories Inc.*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); *In re Kulling*, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and *In re Geisler*, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

Clearly, carbon source concentration is a result effective variable in the growth and metabolite production of bacteria; therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to increase the amount of glucose provided as the sole carbon source for the *Klebsiella pneumoniae* in order to recover a greater amount of product. Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use at least 10 g/L glucose because Cameron et al teach using this amount for the microbial production of 1,2-propanediol (See Cameron et al, col. 11, ln 55-col. 12, ln 16). One skilled in the art would have been motivated to increase the concentration of glucose in order to provide a metabolically carbon source for the *K. pneumoniae* so that the glucose could be utilized in the production of 1,2-propanediol. One would have been motivated to produce 1,2-propanediol from a renewable source, such as glucose, because glucose is very cheap compared to more expensive sources like fructose and rhamnose (See Cameron et al, col. 1, ln 31- col. 2, ln 17), and therefore production of 1,2-propanediol from glucose would be an economically

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desirable alternative. One of ordinary skill in the art would have a reasonable expectation of successfully increasing the amount of 1,2-propanediol produced by *K. pneumoniae*, by increasing the amount of glucose supplied to the *K. pneumoniae* culture because increasing the limiting factor, glucose, will increase the overall production of the desired end product, 1,2-propanediol.

Additionally, though Badia et al do not disclose the culture parameters, including the temperature, pH, aeration or medium ingredients, these conditions are all result effective variables that are routinely optimized by one of ordinary skill in the art. Therefore one of ordinary skill in the art would have determined proper culture conditions comprising a suitable medium, proper oxygen levels, pH and temperature ranges without undue experimentation. One of ordinary skill in the art would have been motivated to manipulate and perform minor experimentation to determine optimum culture conditions so that the *Klebsiella pneumoniae* culture would have optimal growth conditions. One would have a reasonable expectation of success that the culture conditions could be manipulated and optimized because cell culture conditions are well known in the art, as are minor modifications that can be to culture conditions to improve growth based on individual cultures.

Therefore the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Conclusion

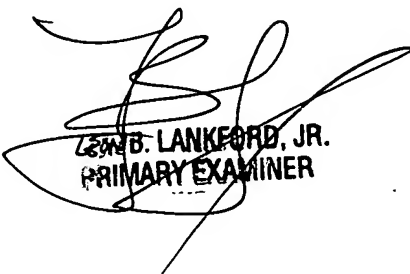
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allison M. Ford whose telephone number is 571-272-2936. The examiner can normally be reached on 7:30-5 M-Th, alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn can be reached on 571-272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Allison M Ford
Examiner
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L. B. LANKFORD, JR.
PRIMARY EXAMINER